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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/784,199	02/24/2004	Masahiko Ito	15-046	9253

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POSZ LAW GROUP, PLC
12040 SOUTH LAKES DRIVE
SUITE 101
RESTON, VA 20191

EXAMINER

KITOV, ZEEV V

ART UNIT PAPER NUMBER

2836

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/784,199	Applicant(s) ITO, MASAHICO	
	Examiner Zeev Kitov	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner acknowledges a submission of the amendment and arguments filed on September 22, 2006. Amendment and arguments have overcome rejections under 102(b) and 103(a). However, additional search revealed new references pertinent to the case. A new Office Action follows.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Lyon (US 3,428,820). Regarding Claim 1, Lyon discloses a power source (14 in Fig. 1, 2); a voltage comparator (58, 62, 64 and vertical NPN transistor connected to the base of 52 in Fig. 2) connected to the power source for comparing a voltage of the power source with a predetermined reference voltage (58 in Fig. 2) and for outputting a control signal (the vertical transistor not marked in Fig. 2 but indicated in Specification as #60, transistor 60 switches ON) when the power source voltage is higher than the reference voltage (voltage drop across the zener); and a protecting switch (52 in Fig. 2) disposed in a circuit between the power source and the electrical circuit (load connected to terminal 22 in Fig. 2), the protecting switch being turned off when the control signal is

supplied from the voltage comparator to the protecting switch, thereby protecting the electrical circuit from overvoltage (col. 4, lines 53 – 70).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 – 5 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto et al. (US 5,703,412) in view of Lyon. Claim 2 differs from Claim 1 by its limitation of having a voltage booster. Takemoto et al. disclose the vehicle occupant protection system having the voltage booster (Fig. 1) disposed in a circuit connecting the power source (2 in Fig. 10 and the electrical load circuit (airbag system)). It further recognizes necessity to protect the electrolytic capacitor (4 in Fig. 1) against over-voltages and provides his solution to resolve the problem (by discharging capacitor through transistor 9 in Fig. 1, col. 4, lines 35 – 59). The reference has the same problem solving area, namely providing an over-voltage protection for the electronic parts. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Takemoto et al. solution by introducing the over-voltage protection circuit according to teachings of Lyon, because (I) the capacitor in the Takemoto et al. circuit carries the boosted high voltage and and Takemoto et al. recognizes necessity to protect the capacitor against over-voltages, and (II) the

capacitor in in Takemoto et al. circuit carries high voltage and accumulated high value of the charge; its discharge requires use of relatively expensive high voltage and high current transistor, while in the Lyon circuit for disconnection of the stabilized low power supply voltage (which according to Fig. 2 schematic, is lower than the battery voltage), there is no special high voltage and high current requirements.

Regarding Claim 1, Lyon discloses the over-voltage protection circuit with the series connected switch (52 in Fig. 2). The motivation for modification of the primary reference is the same as above.

Regarding Claim 3, in the Takemoto et al. circuit modified according to teachings of Lyon, the protecting switch is disposed between the power source and the voltage booster. The motivation for such placement of the protecting switch is the same as above.

As per Claims 4 and 5, they require placement of the protective switch in the voltage booster (Claim 4) or between the voltage booster and the load (Claim 5). The criticality of such placement is not disclosed. Neither any advantage of such placement is provided. Therefore, it is considered as mere reversal of parts or integration of the protecting switch into the booster. It would have been obvious to one of ordinary skill in the art at the time the invention was made to move the protecting switch into the voltage booster, since it has been held that a mere reversal of the essential working parts of a device involves only routine skill in the art. *In re Japikse*, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). It would have been obvious to one of ordinary skill in the art at the time the invention was made to integrate the protective

switch into the voltage booster, since it has been held that forming in one piece an article, which has formerly been formed in two pieces and put together involves only routine skill in the art. *In re Larson*, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965) Court stated: "the use of a one piece construction instead of the structure disclosed in [the prior art] would be merely a matter of obvious engineering choice."

Additionally regarding Claim 5, Takemoto et al. disclose placement of the protective switch (9 in Fig. 1) between the voltage booster (1 in Fig. 1) and the load. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the Lyon solution by placing the protective switch between the voltage booster and the load, because in such case the protective switch action (discharge of the protected capacitor) provides the faster and therefore better protection for the capacitor, rather than the circuit with the switch placed upstream of the voltage booster, since in such case, disconnection of the power supply from the voltage booster does not immediately removes the high voltage from the capacitor (due to delays in the voltage booster).

Regarding Claim 7, Takemoto et al. discloses the airbag system (col. 1, lines 7 – 34). As to inflating the airbag with gas upon detection of a collision and igniting device for generating the gas, all these attributes are inherent in the modern airbag system. The Baumgartner et al. (US 6,717,289) reference is used only to demonstrate that the listed elements are inherent in the modern airbag system. Baumgartner et al. list the acceleration sensor (20 in Fig. 1) detecting the collision, igniting circuit (12 and 14 in Fig. 1) for igniting a device for generating the gas, and the electrical power supply,

including battery (28 in Fig. 3 and voltage booster (40 in Fig. 1). All the listed items do not require modification of the previously introduced reference (Takemoto et al.), since they are inherent in the structure of the airbag system. As to use of the Takemoto et al. reference to modify the primary reference (Lyon), the motivation was given above.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takemoto et al. in view of Lyon and Brkovic (US 5,940,287). As per claim 6, it differs from Claim 4 rejected above by its limitation of some schematic details of the voltage booster. Brkovic discloses the switching voltage converter (Fig. 8) having a booster coil (transformer coils 820, 824, 828 in Fig. 8), the switches (830, 834 in Fig. 8) for switching current flowing through the transformer at a high speed, and the rectifying diodes (840 and 844 in Fig. 8), synchronous rectifiers playing a role of the rectifying diodes and allowing current to flow only in one direction from the transformer coils (824 and 844 in Fig. 8) to the electrical load (860 in Fig. 8). The synchronous rectifiers (840 and 844 in Fig. 8) are also used as protecting switches. According to Brkovic, when the switching converter is disabled following detection of one of the abnormal conditions (col. 1, line 32 – col. 2, line 12), the synchronous rectifiers (840 and 844 in Fig. 8) are disconnected (col. 9, lines 36 – 46) to prevent damage to the converter. The reference has the same problem solving area, namely providing the voltage conversion and protecting the voltage converter against abnormal conditions. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have further modified the Takemoto et al. solution by using the voltage booster (converter) with synchronous

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rectifiers according to teachings of Brkovic, because of well known advantages of the synchronous rectifiers, such as higher efficiency than the normal converter with rectifying diodes.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Zeev Kitov whose current telephone number is (571) 272 - 2052. The examiner can normally be reached on 8:00 – 4:30. If attempts to reach examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571) 272 – 2800, Ext. 36. The fax phone number for organization where this application or proceedings is assigned is (571) 273-8300 for all communications.

Z.K.

10/15/2006



EXAMINER
ZEEV KITOV
UNIT 2836
COMMUNICATIONS SECTION
FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE